

FIG. 1
(PRIOR ART)

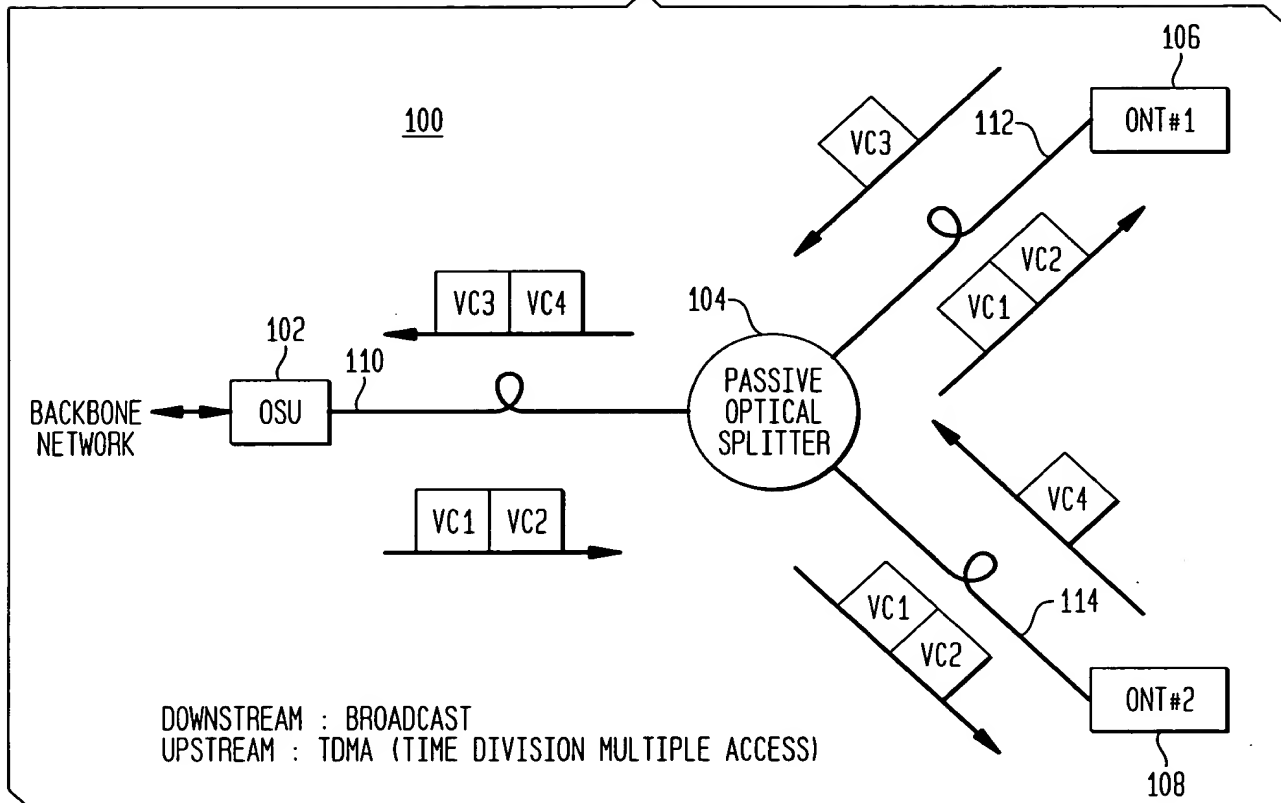


FIG. 2A
(PRIOR ART)

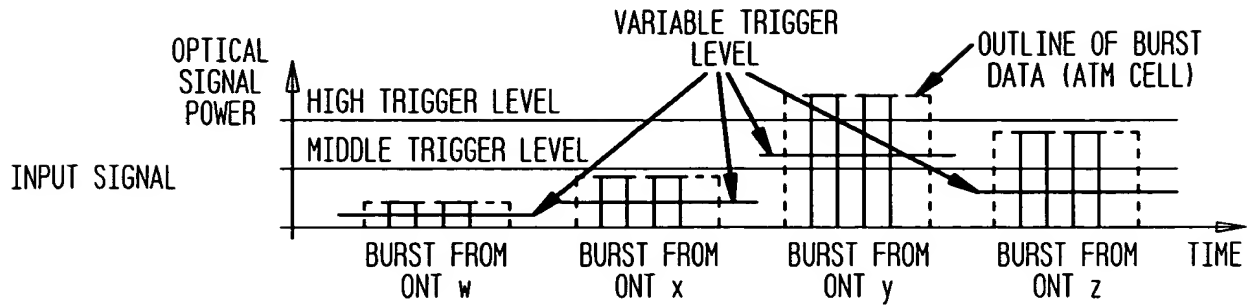


FIG. 2B
(PRIOR ART)

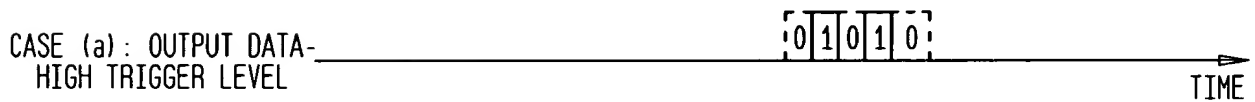


FIG. 2C
(PRIOR ART)



FIG. 2D
(PRIOR ART)



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FIG. 3A

[1] DOWNSTREAM FRAME BOUNDARIES



FIG. 3B

[2] DOWNSTREAM RANGING PLOAM CELL

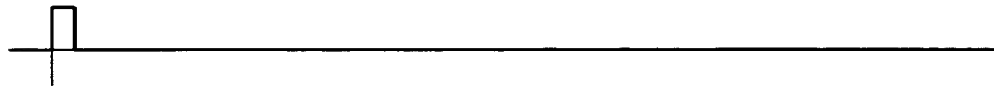


FIG. 3C

[3] UPSTREAM RANGING REPLY CELL ($T_d=0$)

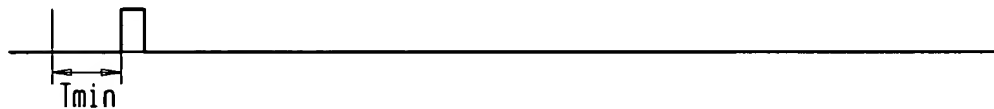


FIG. 3D

[4] UPSTREAM RANGING REPLY CELL ($T_d>0$)

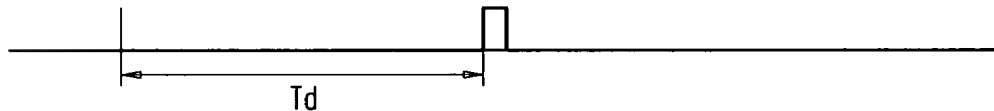


FIG. 3E

[5] UPSTREAM CELL AFTER RANGING

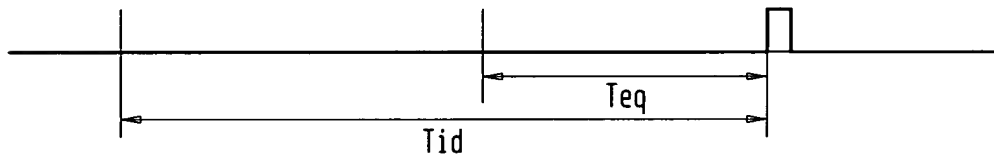


FIG. 3F

[6] DOWNSTREAM PLOAM CELL WITH GRANTS IN 1st, 2nd, 3rd TIME SLOT

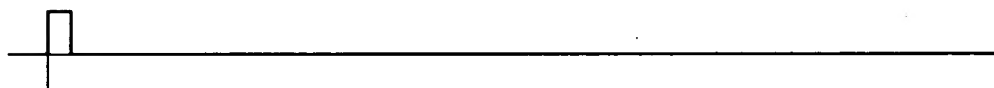


FIG. 3G

[7] 3 UPSTREAM CELL IN 1st, 2nd, 3rd TIME SLOTS AFTER RANGING

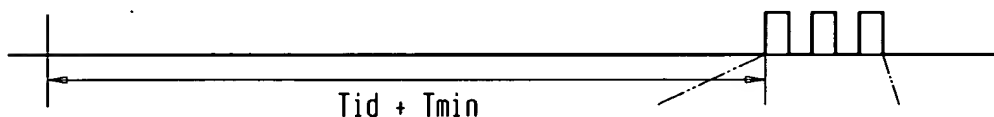


FIG. 3H

[8] EXPANSION OF 3 UPSTREAM CELLS SHOWING POSITION OF bmr RESET PULSE

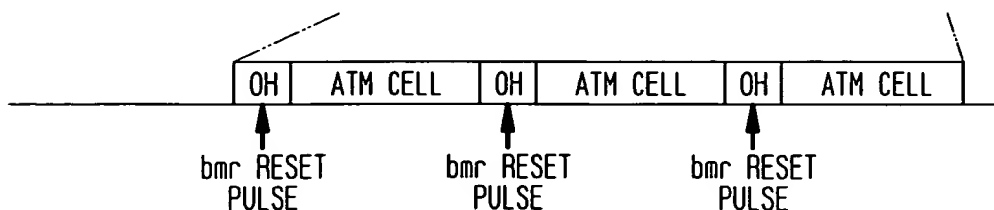
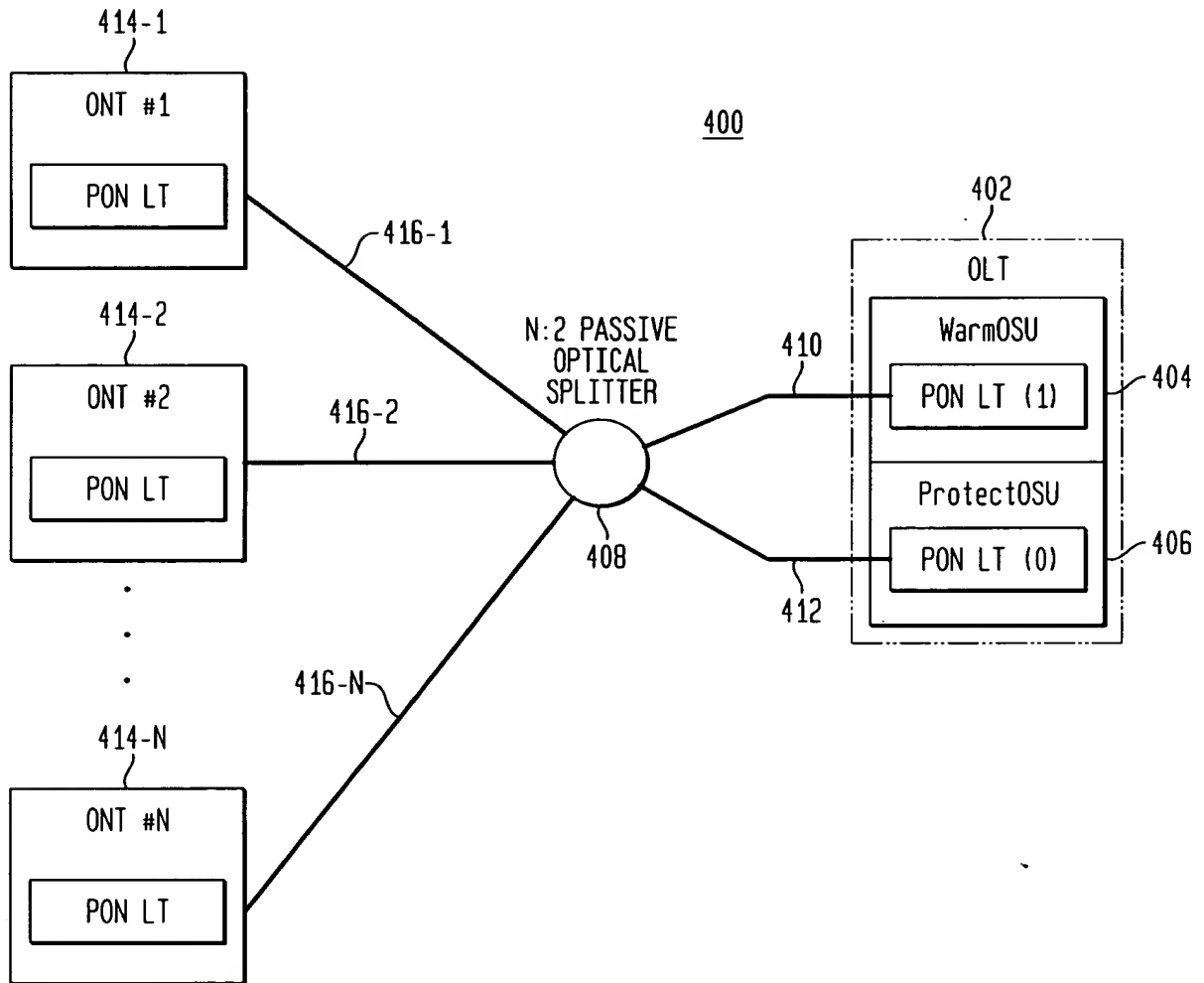
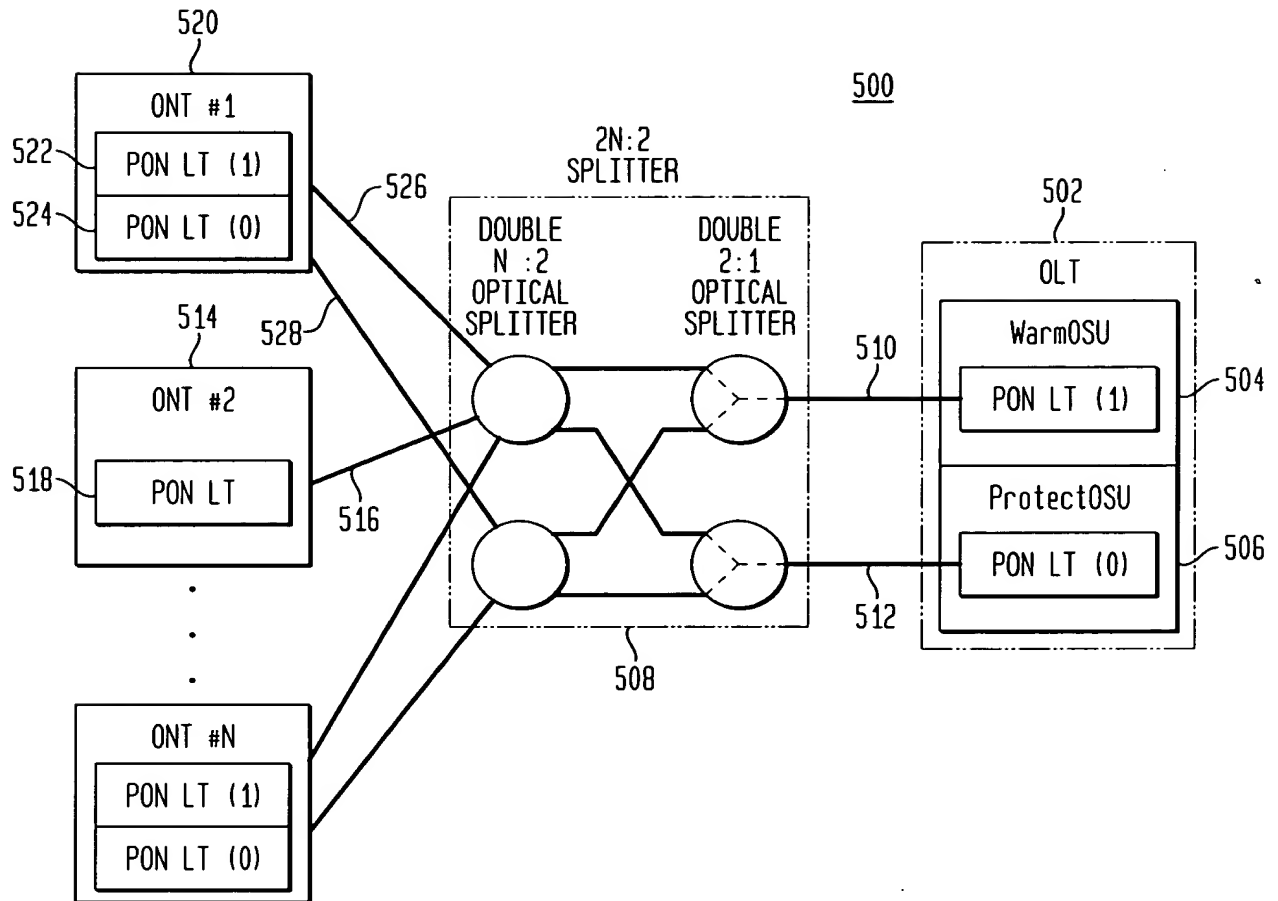


FIG. 4

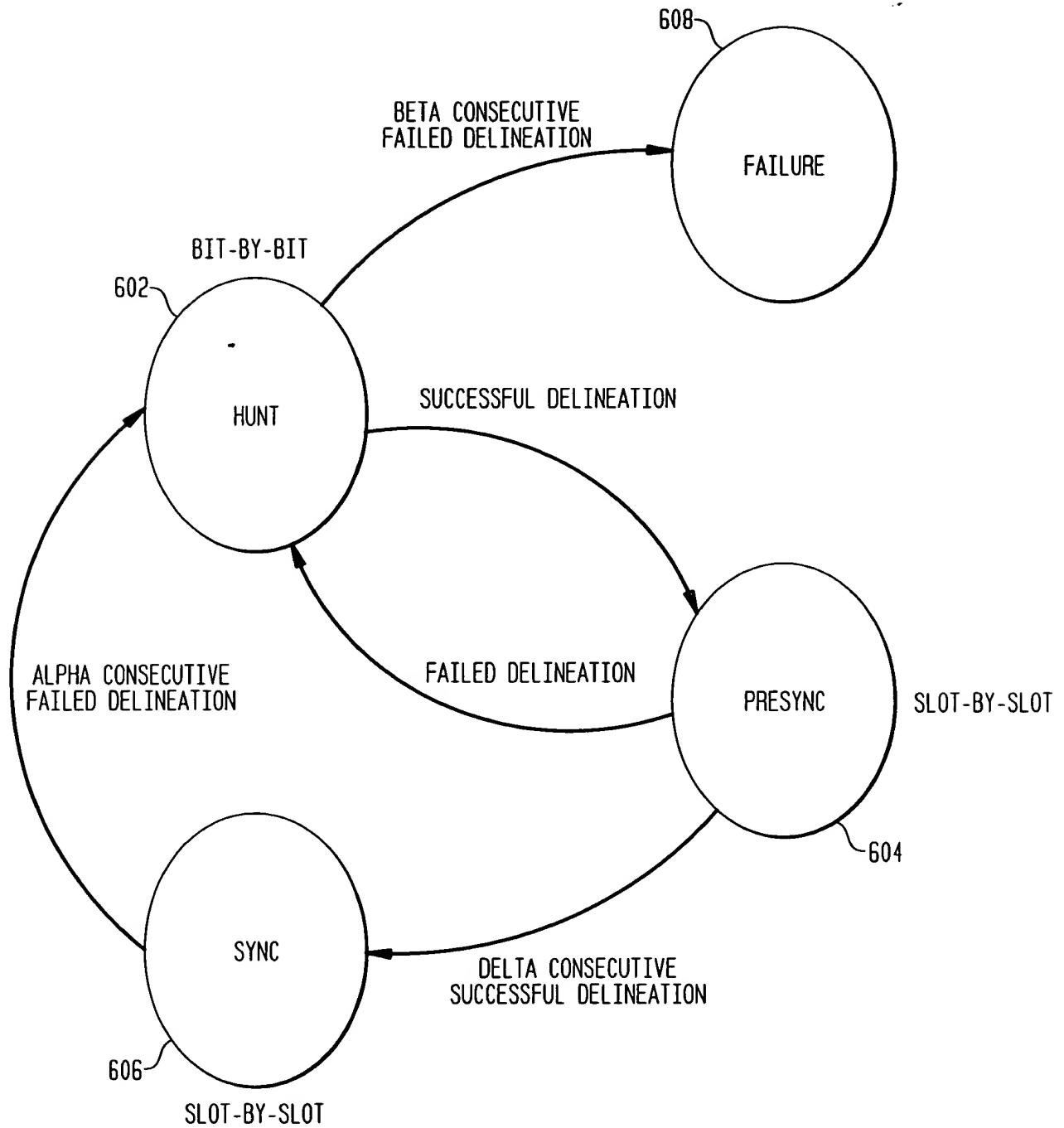


OLT-ONLY DUPLEX SYSTEM

FIG. 5



PARTIAL DUPLEX SYSTEM



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FIG. 7A

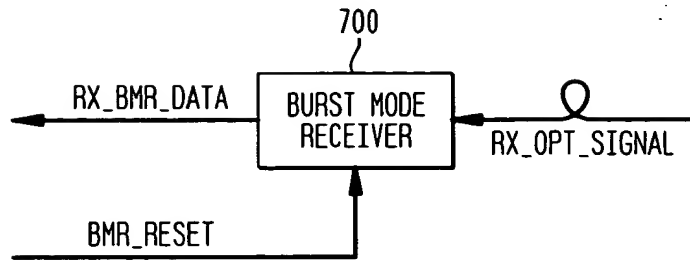


FIG. 7B

TIMING REFERENCE AT WarmOSU

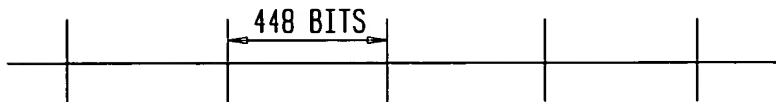


FIG. 7C

RX_OPT_SIGNAL (OPTICAL SIGNALS RECEIVED BY BURST MODE RECEIVER)

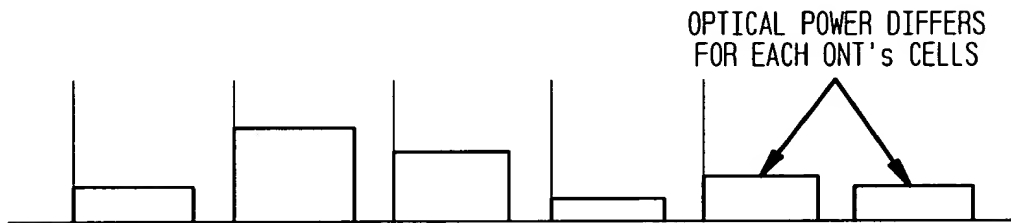


FIG. 7D

BMR_RESET (BURST MODE RECEIVER
RESET SIGNALS-SPACED OUT BY 449/448 BITS)

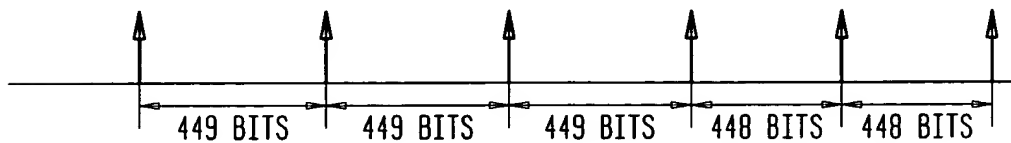


FIG. 7E

RX_BMR_DATA (OUTPUT OF BURST MODE RECEIVER)

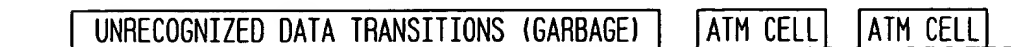


FIG. 8A

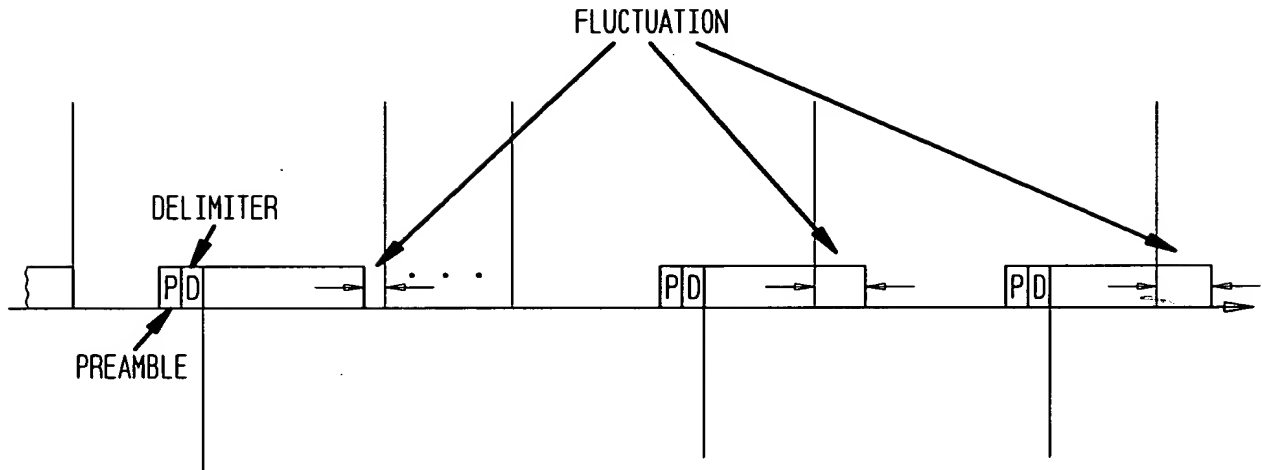


FIG. 8B

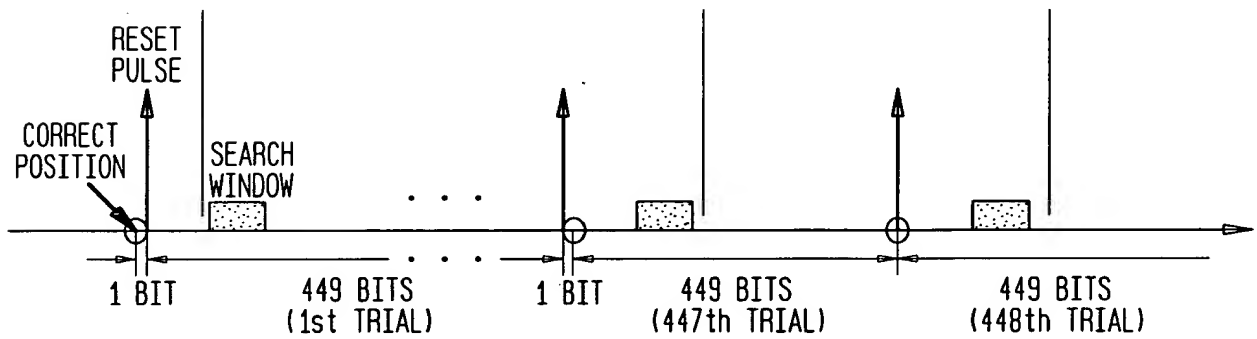


FIG. 8A

FIG. 9A

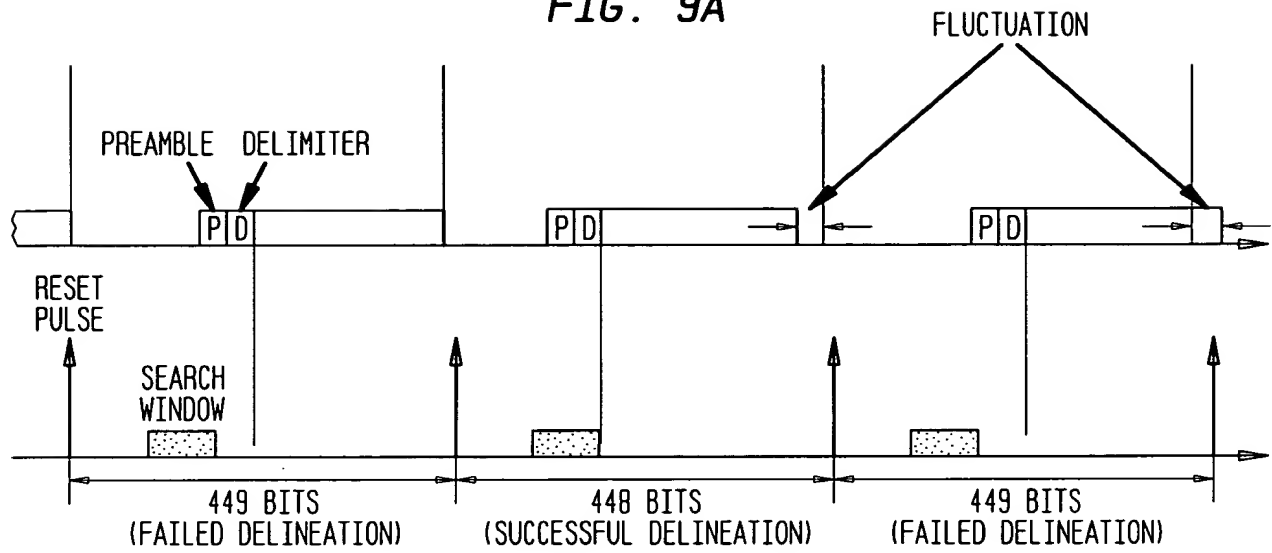
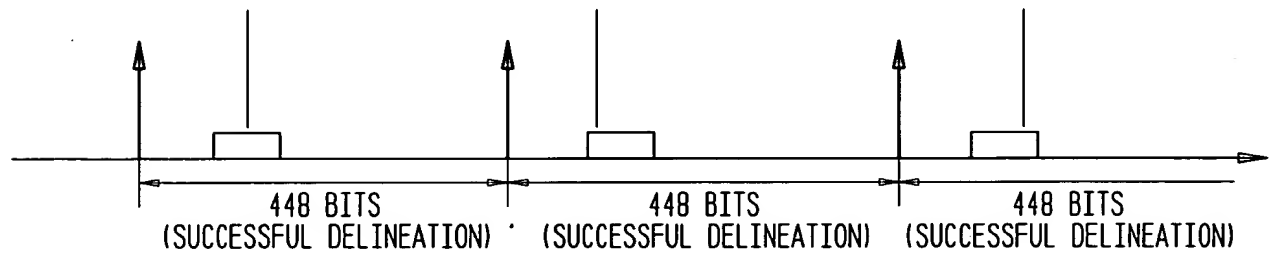


FIG. 9B



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FIG. 10A

FRAME BOUNDARIES ON WarmOSU AND ProtectOSU (SYNCHRONIZED)



FIG. 10B

DOWNSTREAM PLOAM CELLS (PL1 CONTAINS PLOAM GRANT FOR ONT #1)

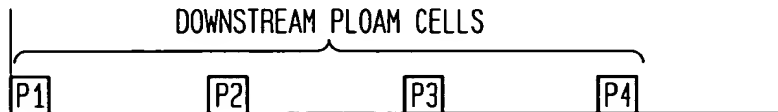


FIG. 10C

UPSTREAM RECEPTION OF PLOAM CELL FROM ONT #1 ($Td1, Td2=0$)

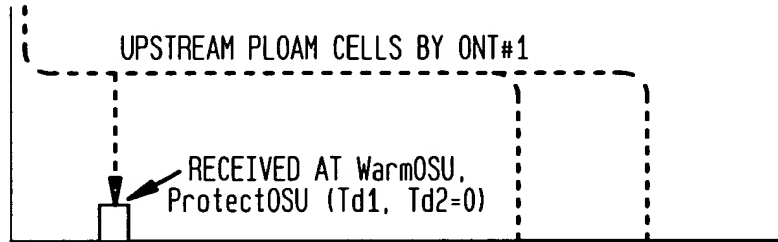


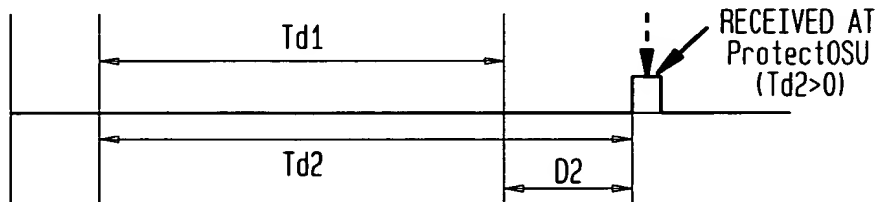
FIG. 10D

UPSTREAM RECEPTION OF PLOAM CELL FROM ONT #1 ($Td1>0$) AT WarmOSU



FIG. 10E

UPSTREAM RECEPTION OF PLOAM CELL FROM ONT #1 ($Td2>0$) AT ProtectOSU



$Td1$: DELAY MEASURED AT WarmOSU

$Td2$: DELAY MEASURED AT ProtectOSU

$D2$: TIME DIFFERENCE BETWEEN START OF FRAME IN WarmOSU AND ProtectSU, DUE TO DIFFERENCE IN DISTANCE TO SPLITTER

*SOF: START OF FRAME

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FIG. 13

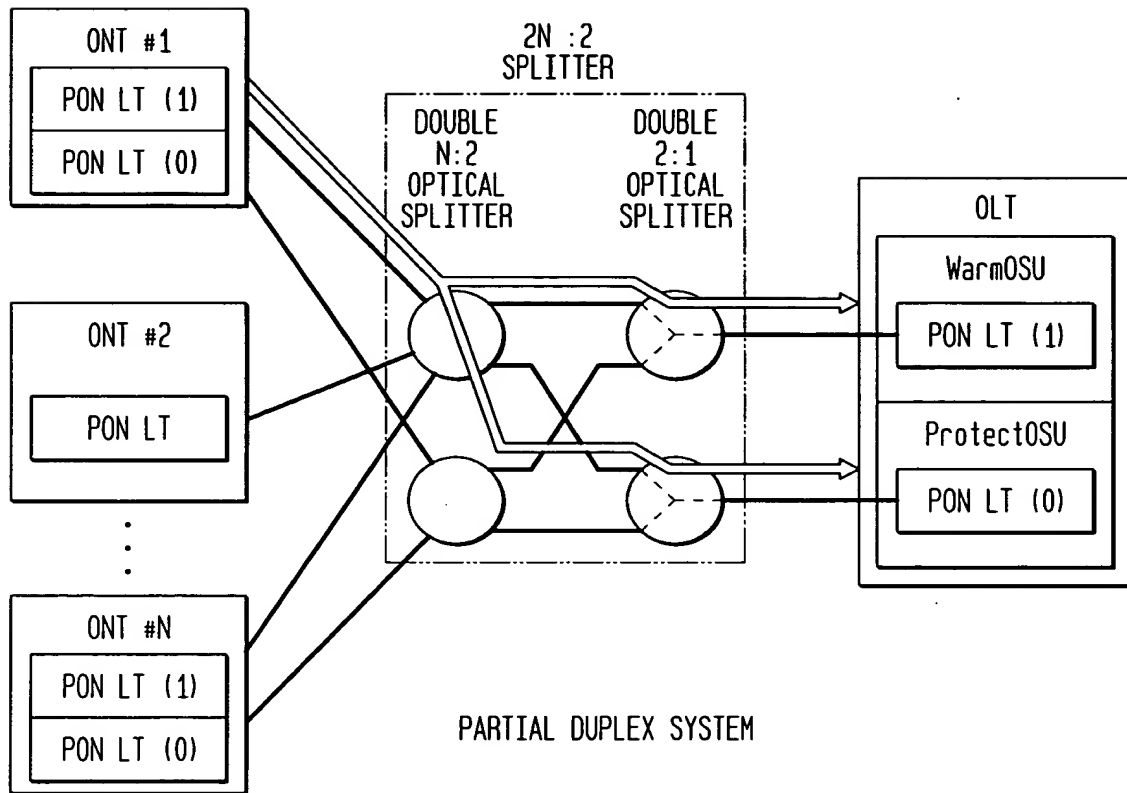
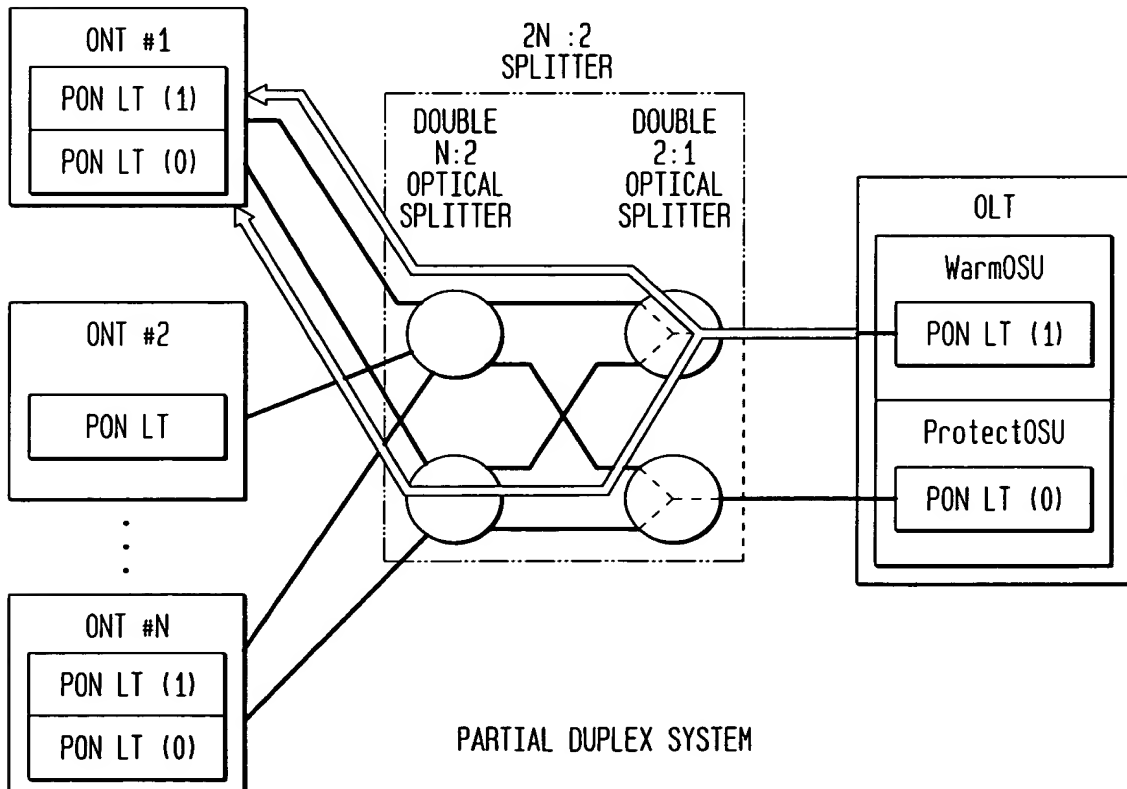


FIG. 14



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